

$\rho(1450)$ $I^G(J^{PC}) = 1^+(1^{--})$ See our mini-review under the $\rho(1700)$. **$\rho(1450)$ MASS**VALUE (MeV)DOCUMENT ID

1465 ± 25 OUR ESTIMATE This is only an educated guess; the error given is larger than the error on the average of the published values.

 $\eta\rho^0$ MODEVALUE (MeV)DOCUMENT IDTECNCOMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

1497 ± 14	1 AKHMETSHIN 01B	CMD2	$e^+e^- \rightarrow \eta\gamma$
1421 ± 15	2 AKHMETSHIN 00D	CMD2	$e^+e^- \rightarrow \eta\pi^+\pi^-$
1470 ± 20	ANTONELLI 88	DM2	$e^+e^- \rightarrow \eta\pi^+\pi^-$
1446 ± 10	FUKUI 88	SPEC	$8.95\pi^-p \rightarrow \eta\pi^+\pi^-n$

¹ Using the data of AKHMETSHIN 01B on $e^+e^- \rightarrow \eta\gamma$, AKHMETSHIN 00D and ANTONELLI 88 on $e^+e^- \rightarrow \eta\pi^+\pi^-$.

² Using the data of ANTONELLI 88, DOLINSKY 91, and AKHMETSHIN 00D. The energy-independent width of the $\rho(1450)$ and $\rho(1700)$ mesons assumed.

 $\omega\pi$ MODEVALUE (MeV)EVTSDOCUMENT IDTECNCOMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

$1582 \pm 17 \pm 25$	2382	3 AKHMETSHIN 03B	CMD2	$e^+e^- \rightarrow \pi^0\pi^0\gamma$
1349 ± 25 ± 10 $- 5$	341	4 ALEXANDER 01B	CLE2	$B \rightarrow D(*)\omega\pi^-$
1523 ± 10		5 EDWARDS 00A	CLE2	$\tau^- \rightarrow \omega\pi^-\nu_\tau$
1463 ± 25		6 CLEGG 94	RVUE	
1250		7 ASTON 80C	OMEG	$20-70\gamma p \rightarrow \omega\pi^0p$
1290 ± 40		7 BARBER 80C	SPEC	$3-5\gamma p \rightarrow \omega\pi^0p$

³ Using the data of AKHMETSHIN 03B and BISELLO 91B assuming the $\omega\pi^0$ and $\pi^+\pi^-$ mass dependence of the total width. $\rho(1700)$ mass and width fixed at 1700 MeV and 240 MeV, respectively.

⁴ Using Breit-Wigner parameterization of the $\rho(1450)$ and assuming the $\omega\pi^-$ mass dependence for the total width.

⁵ Mass-independent width parameterization. $\rho(1700)$ mass and width fixed at 1700 MeV and 235 MeV respectively.

⁶ Using data from BISELLO 91B, DOLINSKY 86 and ALBRECHT 87L.

⁷ Not separated from $b_1(1235)$, not pure $J^P = 1^-$ effect.

 4π MODEVALUE (MeV)DOCUMENT IDTECNCOMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

1435 ± 40	ABELE 01B	CBAR	$0.0\bar{p}n \rightarrow 2\pi^-2\pi^0\pi^+$
1350 ± 50	ACHASOV 97	RVUE	$e^+e^- \rightarrow 2(\pi^+\pi^-)$
1449 ± 4	8 ARMSTRONG 89E	OMEG	$300pp \rightarrow pp2(\pi^+\pi^-)$

⁸ Not clear whether this observation has $I=1$ or 0.

$\pi\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1328 \pm 15	⁹ SCHAEL	05C ALEP	$\tau^- \rightarrow \pi^- \pi^0 \nu_\tau$	
1406 \pm 15	87k ^{10,11} ANDERSON	00A CLE2	$\tau^- \rightarrow \pi^- \pi^0 \nu_\tau$	
\sim 1368	¹² ABELE	99C CBAR	$0.0 \bar{p}d \rightarrow \pi^+ \pi^- \pi^- p$	
1348 \pm 33	BERTIN	98 OBLX	$0.05-0.405 \bar{p}p \rightarrow \pi^+ \pi^+ \pi^-$	
1411 \pm 14	¹³ ABELE	97 CBAR	$\bar{p}n \rightarrow \pi^- \pi^0 \pi^0$	
1370^{+90}_{-70}	ACHASOV	97 RVUE	$e^+ e^- \rightarrow \pi^+ \pi^-$	
1359 \pm 40	¹¹ BERTIN	97C OBLX	$0.0 \bar{p}p \rightarrow \pi^+ \pi^- \pi^0$	
1282 \pm 37	BERTIN	97D OBLX	$0.05 \bar{p}p \rightarrow 2\pi^+ 2\pi^-$	
1424 \pm 25	BISELLO	89 DM2	$e^+ e^- \rightarrow \pi^+ \pi^-$	
1292 \pm 17	¹⁴ KURDADZE	83 OLYA	$0.64-1.4 e^+ e^- \rightarrow \pi^+ \pi^-$	
⁹ From the combined fit of the τ^- data from ANDERSON 00A and SCHAEL 05C and $e^+ e^-$ data from the compilation of BARKOV 85, AKHMETSHIN 04, and ALOISIO 05. $\rho(1700)$ mass and width fixed at 1713 MeV and 235 MeV, respectively. Supersedes BARATE 97M.				
¹⁰ From the GOUNARIS 68 parametrization of the pion form factor.				
¹¹ $\rho(1700)$ mass and width fixed at 1700 MeV and 235 MeV, respectively.				
¹² $\rho(1700)$ mass and width fixed at 1780 MeV and 275 MeV respectively.				
¹³ T-matrix pole.				
¹⁴ Using for $\rho(1700)$ mass and width 1600 ± 20 and 300 ± 10 MeV respectively.				

$\phi\pi$ MODE

VALUE (MeV)		DOCUMENT ID	TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1480 \pm 40	^{15,16} BITYUKOV	87 SPEC	0	32.5	$\pi^- p \rightarrow \phi\pi^0 n$
¹⁵ DONNACHIE 91 suggests this is a different particle.					
¹⁶ Not seen by ABELE 97H.					

$K\bar{K}$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1422.8 \pm 6.5	27k ¹⁷ ABELE	99D CBAR	\pm	0.0	$\bar{p}p \rightarrow K^+ K^- \pi^0$
¹⁷ K-matrix pole. Isospin not determined, could be $\omega(1420)$.					

MIXED MODES

VALUE (MeV)		DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1265.5 \pm 75.3	DUBNICKA	89 RVUE	$e^+ e^- \rightarrow \pi^+ \pi^-$	

$\rho(1450)$ WIDTH

VALUE (MeV)	DOCUMENT ID
400 \pm 60 OUR ESTIMATE	This is only an educated guess; the error given is larger than the error on the average of the published values.

$\eta\rho^0$ MODE

VALUE (MeV)		DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
226±44	18	AKHMETSHIN 01B	CMD2	$e^+e^- \rightarrow \eta\gamma$
211±31	19	AKHMETSHIN 00D	CMD2	$e^+e^- \rightarrow \eta\pi^+\pi^-$
230±30		ANTONELLI 88	DM2	$e^+e^- \rightarrow \eta\pi^+\pi^-$
60±15		FUKUI 88	SPEC	$8.95\pi^-p \rightarrow \eta\pi^+\pi^-n$
18 Using the data of AKHMETSHIN 01B on $e^+e^- \rightarrow \eta\gamma$, AKHMETSHIN 00D and ANTONELLI 88 on $e^+e^- \rightarrow \eta\pi^+\pi^-$.				
19 Using the data of ANTONELLI 88, DOLINSKY 91, and AKHMETSHIN 00D. The energy-independent width of the $\rho(1450)$ and $\rho(1700)$ mesons assumed.				

$\omega\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
429± 42±10	2382	20 AKHMETSHIN 03B	CMD2	$e^+e^- \rightarrow \pi^0\pi^0\gamma$
547± 86 ⁺⁴⁶ ₋₄₅	341	21 ALEXANDER 01B	CLE2	$B \rightarrow D(*)\omega\pi^-$
400± 35		22 EDWARDS 00A	CLE2	$\tau^- \rightarrow \omega\pi^-\nu_\tau$
311± 62		23 CLEGG 94	RVUE	
300		24 ASTON 80C	OMEG	20–70 $\gamma p \rightarrow \omega\pi^0 p$
320±100		24 BARBER 80C	SPEC	3–5 $\gamma p \rightarrow \omega\pi^0 p$
20 Using the data of AKHMETSHIN 03B and BISELLO 91B assuming the $\omega\pi^0$ and $\pi^+\pi^-$ mass dependence of the total width. $\rho(1700)$ mass and width fixed at 1700 MeV and 240 MeV, respectively.				
21 Using Breit-Wigner parameterization of the $\rho(1450)$ and assuming the $\omega\pi^-$ mass dependence for the total width.				
22 Mass-independent width parameterization. $\rho(1700)$ mass and width fixed at 1700 MeV and 235 MeV respectively.				
23 Using data from BISELLO 91B, DOLINSKY 86 and ALBRECHT 87L.				
24 Not separated from $b_1(1235)$, not pure $J^P = 1^-$ effect.				

4π MODE

VALUE (MeV)		DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
325±100		ABELE 01B	CBAR	$0.0\bar{p}n \rightarrow 2\pi^-2\pi^0\pi^+$

$\pi\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
468±41	25 SCHael 05C	ALEP	$\tau^- \rightarrow \pi^-\pi^0\nu_\tau$	
455±41	87k 26,27 ANDERSON 00A	CLE2	$\tau^- \rightarrow \pi^-\pi^0\nu_\tau$	
~374	28 ABELE 99C	CBAR	$0.0\bar{p}d \rightarrow \pi^+\pi^-\pi^-p$	
275±10	BERTIN 98	OBLX	$0.05\text{--}0.405\bar{n}p \rightarrow \pi^+\pi^+\pi^-$	
343±20	29 ABELE 97	CBAR	$\bar{p}n \rightarrow \pi^-\pi^0\pi^0$	
310±40	27 BERTIN 97C	OBLX	$0.0\bar{p}p \rightarrow \pi^+\pi^-\pi^0$	
236±36	BERTIN 97D	OBLX	$0.05\bar{p}p \rightarrow 2\pi^+2\pi^-$	
269±31	BISELLO 89	DM2	$e^+e^- \rightarrow \pi^+\pi^-$	
218±46	30 KURDADZE 83	OLYA	$0.64\text{--}1.4e^+e^- \rightarrow \pi^+\pi^-$	

²⁵ From the combined fit of the τ^- data from ANDERSON 00A and SCHAEFEL 05C and $e^+ e^-$ data from the compilation of BARKOV 85, AKHMETSHIN 04, and ALOISIO 05. $\rho(1700)$ mass and width fixed at 1713 MeV and 235 MeV, respectively. Supersedes BARATE 97M.

²⁶ From the GOUNARIS 68 parametrization of the pion form factor.

²⁷ $\rho(1700)$ mass and width fixed at 1700 MeV and 235 MeV, respectively.

²⁸ $\rho(1700)$ mass and width fixed at 1780 MeV and 275 MeV respectively.

²⁹ T-matrix pole.

³⁰ Using for $\rho(1700)$ mass and width 1600 ± 20 and 300 ± 10 MeV respectively.

$\phi\pi$ MODE

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

130 ± 60 31,32 BITYUKOV 87 SPEC 0 $32.5 \pi^- p \rightarrow \phi\pi^0 n$

³¹ DONNACHIE 91 suggests this is a different particle.

³² Not seen by ABELE 97H.

$K\bar{K}$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

146.5 ± 10.5 27k 33 ABELE 99D CBAR \pm $0.0 \bar{p}p \rightarrow K^+ K^- \pi^0$

³³ K-matrix pole. Isospin not determined, could be $\omega(1420)$.

MIXED MODES

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

391 ± 70 DUBNICKA 89 RVUE $e^+ e^- \rightarrow \pi^+ \pi^-$

$\rho(1450)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \pi\pi$	seen
$\Gamma_2 4\pi$	seen
$\Gamma_3 \omega\pi$	
$\Gamma_4 a_1(1260)\pi$	
$\Gamma_5 h_1(1170)\pi$	
$\Gamma_6 \pi(1300)\pi$	
$\Gamma_7 \rho\rho$	
$\Gamma_8 \rho(\pi\pi)_S$ -wave	
$\Gamma_9 e^+ e^-$	seen
$\Gamma_{10} \eta\rho$	possibly seen
$\Gamma_{11} a_2(1320)\pi$	not seen
$\Gamma_{12} \phi\pi$	possibly seen
$\Gamma_{13} K\bar{K}$	not seen
$\Gamma_{14} K\bar{K}^*(892) + \text{c.c.}$	possibly seen
$\Gamma_{15} \eta\gamma$	possibly seen

$\rho(1450) \Gamma(i) \Gamma(e^+ e^-)/\Gamma(\text{total})$

$\Gamma(\pi\pi) \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$ $\Gamma_1 \Gamma_9/\Gamma$

VALUE (keV)	DOCUMENT ID	TECN	COMMENT
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$			
0.12	³⁴ DIEKMAN 88 RVUE	$e^+ e^- \rightarrow \pi^+ \pi^-$	
$0.027^{+0.015}_{-0.010}$	³⁵ KURDADZE 83 OLYA	$0.64-1.4 e^+ e^- \rightarrow \pi^+ \pi^-$	

$\Gamma(\eta\rho) \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$ $\Gamma_{10} \Gamma_9/\Gamma$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$			
74 ± 20	³⁶ AKHMETSHIN 00D CMD2	$e^+ e^- \rightarrow \eta \pi^+ \pi^-$	
91 ± 19	ANTONELLI 88 DM2	$e^+ e^- \rightarrow \eta \pi^+ \pi^-$	

$\Gamma(\phi\pi) \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$ $\Gamma_{12} \Gamma_9/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$				
<70	90	³⁷ AULCHENKO 87B ND	$e^+ e^- \rightarrow K_S^0 K_L^0 \pi^0$	

$\Gamma(\eta\gamma) \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$ $\Gamma_{15} \Gamma_9/\Gamma$

VALUE (units 10^{-9})	EVTS	DOCUMENT ID	TECN	COMMENT
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$				
$2.9^{+2.8}_{-1.9} \pm 0.1$	33k	³⁸ ACHASOV 06A SND	$e^+ e^- \rightarrow \eta \gamma$	
<41.1		³⁹ AKHMETSHIN 05 CMD2	$0.60-1.38 e^+ e^- \rightarrow \eta \gamma$	
$10.0 \pm 2.2 \pm 1.5$		⁴⁰ AKHMETSHIN 01B CMD2	$e^+ e^- \rightarrow \eta \gamma$	

³⁴ Using total width = 235 MeV.

³⁵ Using for $\rho(1700)$ mass and width 1600 ± 20 and 300 ± 10 MeV respectively.

³⁶ Using the data of ANTONELLI 88, DOLINSKY 91, and AKHMETSHIN 00D. The energy-independent width of the $\rho(1450)$ and $\rho(1700)$ mesons assumed.

³⁷ Using mass 1480 ± 40 MeV and total width 130 ± 60 MeV of BITYUKOV 87.

³⁸ From a combined fit of $\sigma(e^+ e^- \rightarrow \eta \gamma)$ with $\eta \rightarrow 3\pi^0$ and $\eta \rightarrow \pi^+ \pi^- \pi^0$, and fixing $B(\eta \rightarrow 3\pi^0)/B(\eta \rightarrow \pi^+ \pi^- \pi^0) = 1.44 \pm 0.04$. Using 1465 MeV for the $\rho(1450)$ mass and 400 MeV for its width. Recalculated by us from the cross section at the peak.

³⁹ From 2γ decay mode of η using 1465 MeV and 310 MeV for the $\rho(1450)$ mass and width.

⁴⁰ Using the data of AKHMETSHIN 01B on $e^+ e^- \rightarrow \eta \gamma$, AKHMETSHIN 00D and ANTONELLI 88 on $e^+ e^- \rightarrow \eta \pi^+ \pi^-$.

$\rho(1450)$ BRANCHING RATIOS

$\Gamma(\pi\pi)/\Gamma(4\pi)$ Γ_1/Γ_2

VALUE	DOCUMENT ID	TECN	COMMENT
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$			
0.37 ± 0.10	^{41,42} ABELE 01B CBAR	$0.0 \bar{p}n \rightarrow 5\pi$	

$\Gamma(\omega\pi)/\Gamma_{\text{total}}$

VALUE DOCUMENT ID TECN

• • • We do not use the following data for averages, fits, limits, etc. • • •

~0.21 CLEGG 94 RVUE

Γ_3/Γ

$\Gamma(\pi\pi)/\Gamma(\omega\pi)$

VALUE DOCUMENT ID TECN

• • • We do not use the following data for averages, fits, limits, etc. • • •

~0.32 CLEGG 94 RVUE

Γ_1/Γ_3

$\Gamma(\omega\pi)/\Gamma(4\pi)$

VALUE DOCUMENT ID TECN

• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.14 CLEGG 88 RVUE

Γ_3/Γ_2

$\Gamma(a_1(1260)\pi)/\Gamma(4\pi)$

VALUE DOCUMENT ID TECN COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.27±0.08 ⁴¹ ABELE 01B CBAR 0.0 $\bar{p}n \rightarrow 5\pi$

Γ_4/Γ_2

$\Gamma(h_1(1170)\pi)/\Gamma(4\pi)$

VALUE DOCUMENT ID TECN COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.08±0.04 ⁴¹ ABELE 01B CBAR 0.0 $\bar{p}n \rightarrow 5\pi$

Γ_5/Γ_2

$\Gamma(\pi(1300)\pi)/\Gamma(4\pi)$

VALUE DOCUMENT ID TECN COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.37±0.13 ⁴¹ ABELE 01B CBAR 0.0 $\bar{p}n \rightarrow 5\pi$

Γ_6/Γ_2

$\Gamma(\rho\rho)/\Gamma(4\pi)$

VALUE DOCUMENT ID TECN COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.11±0.05 ⁴¹ ABELE 01B CBAR 0.0 $\bar{p}n \rightarrow 5\pi$

Γ_7/Γ_2

$\Gamma(\rho(\pi\pi)_S\text{-wave})/\Gamma(4\pi)$

VALUE DOCUMENT ID TECN COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.17±0.09 ⁴¹ ABELE 01B CBAR 0.0 $\bar{p}n \rightarrow 5\pi$

Γ_8/Γ_2

$\Gamma(\eta\rho)/\Gamma_{\text{total}}$

VALUE DOCUMENT ID TECN

• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.04 DONNACHIE 87B RVUE

Γ_{10}/Γ

$\Gamma(\eta\rho)/\Gamma(\omega\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{10}/Γ_3
• • • We do not use the following data for averages, fits, limits, etc. • • •				
~0.24	43 DONNACHIE 91	RVUE		
>2	FUKUI 91	SPEC	$8.95 \pi^- p \rightarrow \omega\pi^0 n$	

$\Gamma(a_2(1320)\pi)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{11}/Γ
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	AMELIN 00	VES	$37 \pi^- p \rightarrow \eta\pi^+\pi^- n$	

$\Gamma(\phi\pi)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{12}/Γ
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	ABELE 97H	CBAR	$\bar{p}p \rightarrow K_L^0 K_S^0 \pi^0 \pi^0$	
<0.01	43 DONNACHIE 91	RVUE		

$\Gamma(\phi\pi)/\Gamma(\omega\pi)$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>	Γ_{12}/Γ_3
• • • We do not use the following data for averages, fits, limits, etc. • • •						
>0.5	95	BITYUKOV 87	SPEC	0	$32.5 \pi^- p \rightarrow \phi\pi^0 n$	

$\Gamma(K\bar{K})/\Gamma(\omega\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	Γ_{13}/Γ_3
• • • We do not use the following data for averages, fits, limits, etc. • • •			
<0.08	43 DONNACHIE 91	RVUE	

$\Gamma(K\bar{K}^*(892)+\text{c.c.})/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{14}/Γ
• • • We do not use the following data for averages, fits, limits, etc. • • •				
possibly seen	COAN 04	CLEO	$\tau^- \rightarrow K^-\pi^-K^+\nu_\tau$	■

⁴¹ $\omega\pi$ not included.

⁴² Using ABELE 97.

⁴³ Using data from BISELLO 91B, DOLINSKY 86 and ALBRECHT 87L.

$\rho(1450)$ REFERENCES

ACHASOV 06A	PR D74 014016	M.N. Achasov <i>et al.</i>	(SND Collab.)
AKHMETSHIN 05	PL B605 26	R.R. Akhmetshin <i>et al.</i>	(Novosibirsk CMD-2 Collab.)
ALOISIO 05	PL B606 12	A. Aloisio <i>et al.</i>	(KLOE Collab.)
SCHAEL 05C	PRPL 421 191	S. Schael <i>et al.</i>	(ALEPH Collab.)
AKHMETSHIN 04	PL B578 285	R.R. Akhmetshin <i>et al.</i>	(Novosibirsk CMD-2 Collab.)
COAN 04	PRL 92 232001	T.E. Coan <i>et al.</i>	(CLEO Collab.)
AKHMETSHIN 03B	PL B562 173	R.R. Akhmetshin <i>et al.</i>	(Novosibirsk CMD-2 Collab.)
ABELE 01B	EPJ C21 261	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
AKHMETSHIN 01B	PL B509 217	R.R. Akhmetshin <i>et al.</i>	(Novosibirsk CMD-2 Collab.)
ALEXANDER 01B	PR D64 092001	J.P. Alexander <i>et al.</i>	(CLEO Collab.)
AKHMETSHIN 00D	PL B489 125	R.R. Akhmetshin <i>et al.</i>	(Novosibirsk CMD-2 Collab.)
AMELIN 00	NP A668 83	D. Amelin <i>et al.</i>	(VES Collab.)
ANDERSON 00A	PR D61 112002	S. Anderson <i>et al.</i>	(CLEO Collab.)
EDWARDS 00A	PR D61 072003	K.W. Edwards <i>et al.</i>	(CLEO Collab.)
ABELE 99C	PL B450 275	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ABELE 99D	PL B468 178	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)

BERTIN	98	PR D57 55	A. Bertin <i>et al.</i>	(OBELIX Collab.)
ABELE	97	PL B391 191	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ABELE	97H	PL B415 280	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ACHASOV	97	PR D55 2663	N.N. Achasov <i>et al.</i>	(NOVM)
BARATE	97M	ZPHY C76 15	R. Barate <i>et al.</i>	(ALEPH Collab.)
BERTIN	97C	PL B408 476	A. Bertin <i>et al.</i>	(OBELIX Collab.)
BERTIN	97D	PL B414 220	A. Bertin <i>et al.</i>	(OBELIX Collab.)
CLEGG	94	ZPHY C62 455	A.B. Clegg, A. Donnachie	(LANC, MCHS)
BISELLLO	91B	NPBPS B21 111	D. Bisello	(DM2 Collab.)
DOLINSKY	91	PRPL 202 99	S.I. Dolinsky <i>et al.</i>	(NOVO)
DONNACHIE	91	ZPHY C51 689	A. Donnachie, A.B. Clegg	(MCHS, LANC)
FUKUI	91	PL B257 241	S. Fukui <i>et al.</i>	(SUGI, NAGO, KEK, KYOT+)
ARMSTRONG	89E	PL B228 536	T.A. Armstrong, M. Benayoun	(ATHU, BARI, BIRM+)
BISELLLO	89	PL B220 321	D. Bisello <i>et al.</i>	(DM2 Collab.)
DUBNICKA	89	JPG 15 1349	S. Dubnicka <i>et al.</i>	(JINR, SLOV)
ANTONELLI	88	PL B212 133	A. Antonelli <i>et al.</i>	(DM2 Collab.)
CLEGG	88	ZPHY C40 313	A.B. Clegg, A. Donnachie	(MCHS, LANC)
DIEKMAN	88	PRPL 159 101	B. Diekmann	(BONN)
FUKUI	88	PL B202 441	S. Fukui <i>et al.</i>	(SUGI, NAGO, KEK, KYOT+)
ALBRECHT	87L	PL B185 223	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
AULCHENKO	87B	JETPL 45 145	V.M. Aulchenko <i>et al.</i>	(NOVO)
		Translated from ZETFP 45 118.		
BITYUKOV	87	PL B188 383	S.I. Bityukov <i>et al.</i>	(SERP)
DONNACHIE	87B	ZPHY C34 257	A. Donnachie, A.B. Clegg	(MCHS, LANC)
DOLINSKY	86	PL B174 453	S.I. Dolinsky <i>et al.</i>	(NOVO)
BARKOV	85	NP B256 365	L.M. Barkov <i>et al.</i>	(NOVO)
KURDADZE	83	JETPL 37 733	L.M. Kurdadze <i>et al.</i>	(NOVO)
		Translated from ZETFP 37 613.		
ASTON	80C	PL 92B 211	D. Aston	(BONN, CERN, EPOL, GLAS, LANC+)
BARBER	80C	ZPHY C4 169	D.P. Barber <i>et al.</i>	(DARE, LANC, SHEF)
GOUNARIS	68	PRL 21 244	G.J. Gounaris, J.J. Sakurai	

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ACHASOV	06D	JETP 103 720	N.N. Achasov <i>et al.</i>	(SND Collab.)
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EBERT	05	MPL A20 1887	D. Ebert, R.N. Faustov, V.O. Galkin	
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CLOSE	02	PR D65 092003	F.E. Close, A. Donnachie, Yu.S. Kalashnikova	
ADAMS	01B	PL B516 264	G.S. Adams <i>et al.</i>	(BNL E852 Collab.)
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KURDADZE	86	JETPL 43 643	L.M. Kurdadze <i>et al.</i>	(NOVO)
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BARKOV	85	NP B256 365	L.M. Barkov <i>et al.</i>	(NOVO)
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